Determinants of Students' Response to the Pedagogy of Advance Research Techniques in Delta State Polytechnic, Ogwashi-Uku, Nigeria

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ABSTRACT

Teaching and Learning research is a complex yet interesting process. It is usually included in the curriculum for studies in higher institutions as a core course. This paper seeks to investigate the determinants of students' response to the pedagogy of research in Delta state polytechnic. Descriptive survey research design method was employed for this study. Three hundred students were used from the population of the study to carry out this study. The questionnaire was the only instrument used for data collection. Frequency counts and means were used to analyze the data collected. The study revealed that students respond positively to the pedagogy of research techniques since majority of the respondents claim to pass the course on their first attempt and find the course interesting. From the analysis carried out, it was found that the factors that affects students response to the pedagogy of research techniques were basically the lecturer in charge, inadequate study materials, finance etc. It was also discovered that there is a no significant relationship between gender of the students and their response to the pedagogy of research techniques. Hence, recommendations were made to improve the pedagogy of research techniques in Delta state polytechnic, Ogwashi- uku.

Keywords: Learning, pedagogy, advanced research techniques, Research methods, Students

Aims Research Journal Reference Format:

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1. INTRODUCTION

Research methods are offered as courses in higher institutions of learning and introduce students to a variety of state-of-the-art research techniques, both practically and theoretically, which are commonly used in the various fields of studies. The idea is to enable students gain practical skills for advanced research, be able to record and analyze scientific data, be able to read and write scientific papers, orally present scientific information and to appreciate and design solutions to scientific problems.

Research has been defined by Benedetti (2017) as the systematic investigation of a subject in order to find something new. In the broadest sense of the word, the definition of research, according to Shuttleworth (2008) includes any gathering of data, information, and facts for the advancement of knowledge. Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue". It consists of three steps: pose a question, collect data to answer the question, and present an answer to the question(Caswell,2008). Pedagogy, on the other hand, is a contested term. It is the discipline that deals with the theory and practice of teaching. Hinchliffe (2000) had a different school of thought about pedagogy. He defined pedagogy as learning oriented towards social goals. Watkins and Mortimore (2009) defined pedagogy as any conscious activity by one person designed to enhance learning in another. According to Bernstein (2000, 78) pedagogy 'is a sustained process whereby somebody(s) acquires new forms or develops existing forms of conduct, knowledge, practice and criteria from somebody(s) or something deemed to be an appropriate provider and evaluator'.

Generally, teaching and learning are one of the main components in pedagogy and educational planning which is a key factor in conducting educational plans. Despite the importance of good teaching, the outcomes are far from ideal.(Bidabadi, Isfahani and Khalili, 2016). Unfortunately, rapid changes of modern world have caused the Higher Education System to face a great variety of challenges. Therefore, training more eager, thoughtful individuals in interdisciplinary fields is required for the effective teaching of research methods.

This is because the teaching of research methods places very specific demands on teachers and learners. The capacity to undertake and engage with research 'requires a combination of theoretical understanding, procedural knowledge and mastery of a range of practical skills' (Kilburn et al., 2015). With effective pedagogy of research methods, students should develop an advanced understanding of research design and evaluation (including questionnaire design, survey technique and sampling procedures), advanced skills in the selection, SPSS calculation and reporting of appropriate statistical tests (including multivariate data screening, advanced parametric inferential statistical tests, reliability, power and effect size) and the ethics of research (including issues related to culture and dependent populations).

Unfortunately, in higher institutions of learning especially polytechnic, the pedagogy of research methods have been hampered by a number of factors. One well known challenge is the nature of the curriculum of research methods. Explaining this, Benson, and Blackman (2003) wrote that the challenge is one of making the research methods curriculum interesting to students. With regard to shifting from a teacher centred to a student-centred approach to teaching, the pedagogical challenge is one of moving away from a standard didactic approach of transferring technical information about research methods to students, to the creation of an interactive environment in which students are able to master that technical information through processes of communication, experience, reflection and collective analysis. The main pedagogical objective in shifting toward a more student-centred approach is to enhance students' experiential understanding of the complexities and creativity of conducting effective research in today's environments.

Owing to this, Barraket(2005) carried out an experimental study on using a student- centered approach for the pedagogy of research methods and found that the method significantly enhanced students' learning and response to the pedagogy of research methods. Another problem associated with the pedagogy of research techniques is the approach used. Some of the approaches currently used in higher institutions of learning like polytechnic to develop the teaching and learning of research methods and techniques are inadequate. It is against these backgrounds that the researchers seek to investigate determinants of students' response to the pedagogy of advance research techniques in Delta state polytechnic, Ogwashi-uku.

1.1 Statement of problem

The pedagogy of research methods in the applied sciences, social sciences, pure sciences, arts, education, engineering and all fields of knowledge is very crucial for capacity building and educational development. Yet, the pedagogies involved, however, remain under-researched and the pedagogical culture of research techniques under-developed. More so, certain studies like that of Mendy (2016) and Aguado (2012) have discovered that some of the pedagogical approaches used in teaching and learning research methods are inadequate. In this scenario no doubt, the response level of students to the pedagogy of research techniques may be limited. Another factor that is said to affect students response to the pedagogy of research methods is gender of students. Studies have shown gender differences exist in the way boys and girls respond to the teaching of other courses. However, empirical evidence is lacking on the existence of gender differences in students response to the pedagogy of research methods. This study would therefore bridge this gap. Hence, this study seeks to investigate the various determinants of students' response to the pedagogy of advance research techniques in Delta state polytechnic, Ogwashi-uku

1.2 Objectives of the study

The following are the objectives of this study:

1. To find out the extent students respond to the pedagogy of research methods in Delta state polytechnic, Ogwashi-uku.
2. To find out how students respond to the pedagogy of advanced research techniques in Delta state polytechnic, Ogwashi-uku.
3. To determine the factors that affect students' response to the pedagogy of advance research techniques in Delta state polytechnic, Ogwashi-uku.
4. To establish if there is a relationship between the gender of students and their response to the pedagogy of research techniques

1.3 Research Questions

The following research questions are posed in line with the objectives of this study.

1. To what extent do students respond to the pedagogy of research methods in Delta state polytechnic, Ogwashi-uku?
2. How do students respond to the pedagogy of advanced research techniques in Delta state polytechnic, Ogwashi-uku.
3. What are the factors that affect students' response to the pedagogy of advance research techniques in Delta state polytechnic, Ogwashi-uku?

1.4 Research Hypothesis

- H₀₁. There is no significant relationship between the gender of students and their response to the pedagogy of research techniques.

2. LITERATURE REVIEW

The import of teaching and learning research methods or techniques in higher institutions of learning cannot be overemphasized. The truth is undergraduate and postgraduate students need to learn advanced research techniques for a stronger foundation for their future. Besides they have no choice as a Project/thesis/dissertation is the requirement for a Bachelor or Masters degree. Supporting this, Mendy (2016) stated that it is now customary for many students to complete a research dissertation even at undergraduate level the teaching of research methodology has become increasingly important. Nayak (2009) added that teaching, learning and carrying out research is important as it leads to personal satisfaction of contributing to science and the society, recognition and appreciation by peer in the profession, acquiring a job, getting a job promotion or even to retain a job. Therefore, research methods lecturers must take up the herculean task of teaching advanced research techniques effectively. In order to complete dissertations students have to be acquiring a level of skill with regards to research method and this has become a significant challenge especially for novice academics. A similar challenge, although with different implications for teaching, learning and scholarship, is also faced by tutors responsible for this crucial competency developmental activity. Increasingly novice researchers make assumptions, largely attributable to what they are taught, about academic research that needs further clarification. The skills required in research method are not trivial. They cover a wide range of issues from those related to the formulation of a research question or hypothesis, to identifying appropriate data collection methods, to understanding data analysis techniques, to establishing findings, testing the hypothesis and producing some credible conclusions.

Notably, Benedetti (2017) provided new knowledge students who have been taught advanced research techniques effectively should have. They are as follows:

- ❖ Categorization - form a typology of works, personalities, objects, etc.
- ❖ Description - observe and write up what they consider typical, specific, or accidental
- ❖ Explanation - answer the question: why?
- ❖ Evaluation - make judgements and compare to a norm, scale, typology, etc.
- ❖ Comparison - list the similarities and differences in order to better understand one or both of the compared things
- ❖ Correlation - do two phenomena influence each other? How? Are there links between two things? Or, are they independent?
- ❖ Prediction - on the basis of past correlations, tell how probable a future event, action, outcome, etc. could be.
- ❖ Control/validation - in technology or sciences implementing the new correlation, correspondence, cause and effect, etc. In humanities: state the probability of similar correspondence, correlation, etc. in cases you have not investigated.

Students who have been effectively taught advanced research techniques should also be able to collect data use statistical software, and write up their results. They should have the ability to design and execute research projects and acquire certain new knowledge on research. However, these new knowledge can't be acquired without certain agents and determinants complementing the process of effective pedagogy of research methods. Two agents that can complement the pedagogy of research methods in higher institutions of learning are Libraries and the internet. Unfortunately, for today's students, research methods are less about libraries and more about what can be found on laptops. A Pew Internet study reveals that 94 percent of teachers find students are most likely to use Google as their primary research tool and three-quarters of teachers witness students turning to Wikipedia for information.

The wealth of Internet information available is both a blessing and curse for student researchers. For every authoritative peer-reviewed journal, there are an equal amount of poorly developed, inaccurate content farms. The same Pew study also found that teacher's estimate only 40 percent of students can accurately judge the quality of online research information as many are unaware of the benefits of utilizing advanced research techniques to navigate search engines and databases to find the best resources. (Utica College, 2017).

There are certain challenges that affect the pedagogy of research methods in schools. Reviews of literature suggest a disjointed and under-developed discourse around the pedagogy of research methods learning. A systematic review by Wagner et al., (2011) identified a lack of 'pedagogic culture' in research methods teaching, concluding that there is little guidance available to teachers. The authors define this deficit as a lack of debate, cross-citation within the literature, dialogue across disciplinary contexts, and substantial empirical research.

Earley's (2014) review also notes a paucity of pedagogical research and pedagogic culture in research methods across disciplinary boundaries. He observes that teachers of methods cannot inform their practice by calling upon a substantial body of literature characterised by systematic debate, investigation and evaluation of teaching and learning. Instead, there is a reliance on peers, trial-and-error and methodological know-how, rather than pedagogic knowledge informed by theory or research (Earley, 2014). Given that the ability to undertake and evaluate research are foundational within the social sciences (Ryan et al., 2014). This pedagogic situation, Lewthwaite and Nind (n.d) concluded, is troubling.

Furthermore, Aguado (2012) opined that many students at both undergraduate and graduate levels possess very weak foundations for conducting empirical research. Empirical research is different from most of the other "research" that many students have completed. Also, data gathering can be another challenge students have in their response to the pedagogy of research methods. In view of this Aguado wrote that data gathering poses problems for researchers, and new challenges for students in research-methods courses. It becomes important to educate students about the very large archives of available raw data and how they are entered into a statistical software package; and to create a survey instrument that could be used to gauge the attitudes of local elected officials.

Sadly, the approaches used in teaching research methods are inadequate. Research courses are either qualitative or quantitative. Following the structure of most introductory research methods textbooks, when both approaches (qualitative and quantitative) are taught in a research course, they are discussed separately, with little effort to link them together. On the other hand, strong pressures are currently being faced from applied researchers in the field to train 'research experts' who are able to incorporate both the qualitative and quantitative methods and approaches in their projects (Tashakkori & Teddlie, 2003).

3. RESEARCH METHODOLOGY

The research design adopted in the study is survey design. This research design was adopted based on the fact that only the representation of the entire population of students in Delta state polytechnic, Ogwashi-uku, were sampled and administered the instrument (Questionnaire) of data collection used for this study. Besides these, it helps to facilitate researchers study in reaching logical conclusion without necessarily covering the entire population of the study at a minimum cost.

The study population was made to include all the students in Delta state Polytechnic. The purposive sampling technique was used to collect required data from population. Only programmes with HND courses which include Art and Design (Fashion Design and Clothing Technology, and fine Art), Business (Accountancy, Business Administration, Human Resource Management, Mass Communication, Office Technology Management and Production Management), Engineering (Foundry Engineering, Mechanical Engineering, Metallurgical Engineering and Welding and Fabrication) and Applied Sciences (Computer Science, Mathematics and Statistics and Hospitality and Tourism Management). 300 students from each school, were picked from the total population and the questionnaires were delivered to the selected students.

Questionnaire was carefully designed to collect required data from respondents. Questionnaire was classified into four major categories; first category was about demographic information of students including students gender and the grade point students had for the course. Second category was to determine the extent students respond to the pedagogy of research methods in Delta state polytechnic, Ogwashi-uku. The third section was to collect data on how students respond to the pedagogy of advanced research techniques in Delta state polytechnic, Ogwashi-uku while the final section covered the factors that affect students' response to the pedagogy of advance research techniques in Delta state polytechnic, Ogwashi-uku. Data collected are analyzed using mean scores, inferential statistics and chi-square was used to test the hypothesis.

4. DATA ANALYSIS/ DISCUSSION OF FINDINGS

Research Question1: To what extent do students respond to the pedagogy of advanced research methods in Delta State Polytechnic, Ogwashi-uku.

Table 1: Extent students respond to advanced research methods

Aspects of research methods	Very large extent (VLE)		Large extent (LE)		Small Extent (SE)		Very Small Extent (VSE)		Total		X
	No	%	No	%	No	%	No	%	No	%	
Theoretical aspects	21	10.3	233	77.7	20	6.7	16	5.3	300	100	2.93
Data collection	45	15	212	70.7	43	14.3	-	-	300	100	3.00
Data analysis	-	-	34	11.3	266	88.7	-	-	300	100	2.11
Use of SPSS statistical tool	-	-	3	1	33	11	264	88	300	100	1.13
Designing a research project	15	5	242	80.7	43	14.3	-	-	300	100	2.90
Orally defending a research project	34	11.3	188	62.7	50	16.7	28	9.3	300	100	2.76

Criterion mean: 2.50

Table 1 shows the extent students respond to the pedagogy of advanced research methods in dspg. Out of the 300 respondents in this study, 21(10.3%) claimed that they respond to the theoretical aspects of pedagogy of advanced research methods to a very large extent, 233(77.7%) respond to a large extent, 20(6.7%) respond to a small extent while 16(5.3%) respondents respond to a very small extent. The item had a mean score of 2.93. Hence, it could be said that students respond to the theoretical aspects of pedagogy of advanced research methods to a large extent. Furthermore, it could be seen that students also respond to a large extent to Data collection pedagogy (x=3.00), designing a research project (x=2.90) and orally defending a research project (x= 2.76). However, students respond to a small extent to the pedagogy of data analysis (x=2.11) and use of SPSS statistical tool (x= 1.13). Could it be that they are not well taught or other factors affected their extent of response to the pedagogy of research methods in these areas?

Research Question 2: How do students respond to the pedagogy of advanced research methods in Delta State Polytechnic, Ogwashi-uku.

Table 2: How students respond to the pedagogy of research methods

How students respond to research methods pedagogy	Strongly Agree		Agree		Disagree		Strongly Disagree		Total		X
	No	%	No	%	No	%	No	%	No	%	
You like the course research methods	13	4.3	264	88	23	7.7	-	-	300	100	2.96
You hate the course research methods	-	-	23	7.7	264	88	13	4.3	300	100	2.03
You have failed the course research methods many times	-	-	-	-	156	52	144	48	300	100	1.52
You passed the course research methods on your first attempt	245	81.7	30	10	25	8.3	-	-	300	100	3.73

Criterion mean= 2.50

It could be clearly seen from table2 that students in Delta state polytechnic ogwashi- uku respond positively to the pedagogy of research methods as majority of the respondents (275 respondents) claim to pass the course at their first attempt. With a mean score of 3.73, the item is accepted as significant as it is above the criterion mean of 2.50 for this study. Also, 264 (88%) students agreed that they liked the course research methods, while same number disagreed that they hate the course. Majority of respondents (156, 52%) also disagreed that the failed the course several times. It could therefore be implied by these findings that students in Delta state polytechnic respond positively to the pedagogy of research methods.

Research Question 3: What are the factors that affect students' response to the pedagogy of advance research techniques in Delta State Polytechnic, Ogwashi-uku?

Table 3: Factors that affect students' response to the pedagogy of advanced research methods.

Factors	Strongly Agree		Agree		Disagree		Strongly Disagree		Total		X
	No	%	No	%	No	%	No	%	No	%	
Inadequate practical training	170	56.7	98	32.7	17	5.6	15	5	300	100	3.41
Too much Information given at a time	3	1	151	47	80	26.5	76	25.3	300	100	2.33
Teaching technique of Lecturer in charge of the course	187	62.3	75	25	27	9	11	3.7	300	100	3.46
Inadequate study material	116	38.7	100	33.3	40	13.3	44	14.7	300	100	2.96
Simplicity of the course	-	-	1	0.3	9	3	290	96.7	300	100	1.03
Financial constraints	293	97.7	4	1.3	3	1	-	-	300	100	3.96
Limited time/busy schedule	92	30.7	175	58.3	24	8	9	3	300	100	3.32

Criterion mean= 2.50

Table 3 answered research question 3. It shows the factors that affect students' response to the pedagogy of advance research techniques in Delta state polytechnic, Ogwashi-uku. As indicated the data analyzed in Table 3, the factors are inadequate practical training($x= 3.41$), too much information given at a time ($x=2.33$), inadequate study materials($x= 2.96$), financial constraints($x= 3.96$) and limited time/ busy schedule ($x= 3.32$). These items all had mean scores above the criterion mean of this study.

However, majority of the respondents (299 respondents) either strongly disagreed or disagreed that simplicity of the course is not a factor that affects their response to the pedagogy of advanced research methods. It could be implied therefore that students positive response to the pedagogy of advanced research methods is not a product of the simplicity of the course but perhaps at a result of other factors, perhaps the teaching techniques of lecturer in charge.

Research Hypothesis

H₀₁. There is no significant relationship between the gender of students and their response to the pedagogy of research techniques.

Table 4: chi-square analysis on the relationship between gender of students and their response to the pedagogy of advanced research methods

Gender	N	Df	Xcal	Xcrit	Decision
Male	150	4	10.09	9.49	Significant
Female	150				

Table 4 reveals the chi-square analysis on the relationship between gender of students and their response to the pedagogy of advanced research methods. As seen in the table, the calculated Chi-square value is 10.09 and is greater than the critical value of 9.49. Therefore, null Hypothesis 1 "There is no significant relationship between the gender of students and their response to the pedagogy of research techniques" is rejected. This implies that there is a significant relationship between the gender of students and their response to the pedagogy of advanced research methods.

5. CONCLUSION

Although, from the inferences of this study, students have positive response to the pedagogy of advanced research methods, it was disheartening to note that there were negative factors that affect their response to the pedagogy of advanced research. It was even sadder to find out that there is inadequate practical training on research methods especially when advanced research techniques can't be properly learnt without effective practicals. Besides, advanced research methods have been proven to be very rewarding and important for the 21st century students. Hence, all parties, lecturers, library and school management should work together to ensure that advanced research methods pedagogy is uplifted in Delta state polytechnic, Ogwashi-uku.

6. RECOMMENDATIONS

The following recommendations are made based on the findings of this study:

- ❖ An ICT lab should be set up in every department in the polytechnic where students can learn the practical aspect of advanced research methods especially using the SPSS software amongst others.
- ❖ Advanced research techniques should be taught by both lecturers in the department and visiting lecturers in the field of education and statistics.
- ❖ The polytechnic library need to perform their roles in ensuring that students have access to study materials on research techniques. More books on advanced research techniques need to be acquired in the library.
- ❖ Students should be ready to work and stop seeing too much information as a problem affecting their response to the pedagogy of advanced research methods.